MANAGEMENT OBJECTIVES AND OPTIONS FOR COHO SALMON IN UPPER COOK INLET

REPORT TO THE ALASKA BOARD OF FISHERIES

By

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TABLE OF CONTENTS

LIST OF TABLES

Page

LIST OF FIGURES

Page

INTRODUCTION

In September of 1999 the Governor of Alaska requested that the Alaska Board of Fisheries meet to consider establishing a comprehensive Cook Inlet area coho salmon conservation and management plan. The department coalesced available abundance and escapement monitoring data describing stock status of coho salmon (Clark et al. 2000). A history of fishery management strategies and regulations effecting coho salmon (Bethe et al. 2000) was also prepared. A third report presented the department's planned and ongoing coho salmon research activities (Fried and Clark 2000). This report is a companion to these publications and describes management objectives for coho salmon in Upper Cook Inlet by stock groupings discussed by Clark et al. (2000). Management actions in both commercial and sport fisheries are suggested which are thought to achieve those objectives. The department in consultation with the Board has attempted to provide a comprehensive list of potential options to serve as a starting point for discussions at the February 9th Board of Fisheries meeting. In some cases, the department has made recommendations for which stocks that some level of conservation action should be considered. The total report package contains information which should assist the Board in selecting reduction strategies, if required, including distribution of harvest among existing fisheries, regulatory management plans, and existing management strategies and capabilities.

Clark et. al (2000), concluded that coho salmon production has declined in parts of UCI most exemplified with returns beginning in 1997. Bethe et al. (2000) includes a summary of recent regulatory changes and inseason restrictions benefiting coho salmon escapements. The magnitude of actions suggested in this report are based on the period 1997-1999. This coincides with major regulatory changes in 1996 and 1999 affecting coho salmon harvest. Further regulatory actions are proposed to be added to these restrictions. Options for proposed actions are focused after July 31. In some cases options may extend into July, however to be consistent with Board direction they must be clearly directed at coho conservation. This is the period noticed by the Alaska Board of Fisheries for consideration during the special Board of Fisheries meeting in February 2000.

Management actions described for marine waters (sport and commercial) will benefit more than one coho stock grouping. Marine water sport fisheries of consideration in this report occur north of Gore Point (Figure 1). The marine sport fishery occurs primarily from Bluff Point north to waters adjacent to the Ninilchik River, although some effort extends south along the lower Kenai Peninsula. Much of the effort is concentrated adjacent to the mouths of Anchor River, Deep Creek and the Ninilchik River. Commercial fishing occurs in the Central and Northern districts as described by Bethe et al. (2000).

In order to address the coho salmon production decline in Cook Inlet, the department recommends that the Board of Fisheries, at a minimum, take action to reduce the fishery harvest potential in Knik Arm including the Little Susitna River, where escapement based management objectives are established. Precautionary action should be considered for the Kenai River. Regulatory actions taken by the Board in 1997 reduced harvest potential toward the lower end of the range recommended by the department at that time. The general

decline in production for Cook Inlet coho salmon was not anticipated during that meeting, and the Kenai River lacks quantitative management objectives. Lastly, given the somewhat contrary trend of increasing harvest in the Cook Inlet marine recreational fishery, the department recommends reducing its harvest potential. Fishery background information and management options are provided below for all stock groupings (Clark et al. 2000).

KNIK ARM AND LITTLE SUSITNA RIVER

Knik Arm is the most northerly portion of Cook Inlet (Figure 1) and includes all waters of the Matanuska and Knik river drainages, the Little Susitna River drainage, and all waters draining into Knik Arm, excluding those entering south and west of the Eklutna River drainage. Coho salmon are present within the majority of the freshwater drainages of this area. Several of the streams are small in size and flow through the rapidly growing communities of Wasilla and Palmer. Streams, which support significant recreational angling, include the Little Susitna River, Fish Creek, Cottonwood Creek, Wasilla Creek, Jim Creek drainage and the Eklutna tailrace. The Eklutna tailrace supports a directed recreational fishery on stocked coho salmon and we do not recommend any reduction in this or any other stocked fishery. Knik Arm coho salmon are additionally harvested to an unknown degree in Cook Inlet commercial fisheries and the marine recreational fishery occurring adjacent to the lower Kenai Peninsula. Commercial fishing is prohibited in Knik Arm east of Point MacKenzie, until the 2002 fishing season.

The management objective for coho salmon in Knik Arm is to achieve adequate escapements to all systems as well as achieving biological escapement goals (BEG) in drainages for which they have been established. Escapements have been estimated in five Knik Arm streams since the early to mid-1980s. Data are lacking to calculate a biological escapement goal, (BEG) which would maximize yield in all systems except the Little Susitna River. BEGs were set as average foot survey index counts through 1992, for coho escapements into Cottonwood, Jim, and Wasilla creeks. These systems, except Jim Creek, are currently being monitored inseason by weirs. The department is evaluating how index counts trend with weir counts. Attainment of the BEG is based on a single foot survey. The coho salmon BEG for Fish Creek was established using weir counts combined with foot survey counts of the number of coho salmon downstream of the weir. A weir has been operated on Fish Creek since 1968, however dates of operation and location of the weir has varied. The Fish Creek weir is currently operated downstream of primary coho salmon spawning areas. The BEG for the Little Susitna River is based on weir counts with a range of 9,600 to 19,200 coho salmon and a mid-point of 12,000 fish. This BEG was set in 1999 to maximize yield and represents an increase from the 1990 goal of 7,500 fish. The Little Susitna River weir has operated at river mile 71 since 1996 to monitor escapement. During 1986 and 1998 through 1995 the weir was operated at river mile 32.5.

Escapement goals have not been routinely met in most Knik Arm systems. This problem is most apparent in Wasilla Creek where the escapement goal has been achieved only once

since established in 1994 (Table 1). Jim Creek escapements have been achieved during four of the last six years. The Fish Creek escapement goal has been achieved only once in the last five years. However; the weir, installed primarily to count sockeye salmon, was removed prior to completion of the coho salmon migration during 1994 through 1996 and was 122 fish below in 1997. While weir counts for 1994-1996 were expanded to account for this early termination, run timing into this system is variable. The 1998 escapement was the highest on record, while the 1999 count was approximately 800 fish below the BEG of 2,700 fish. Cottonwood Creek escapement has exceeded the BEG only twice in the last five year period (1997 and 1998). The 1999 escapement index of 71 fish was the lowest since 1992 when only six fish were observed. Escapement goals were achieved in Fish, Cottonwood, and Wasilla creeks only in 1997 and 1998. In 1997 the commercial fishery was closed early and bag limit reductions were enacted in fresh water (Bethe et al. 2000). In 1998, extended closures of commercial fisheries occurred for sockeye salmon conservation and are thought to have reduced coho salmon exploitation. Extended closures in the commercial fishery also occurred in 1984, 1985, 1991, and 1994. The Cottonwood Creek index was greater than the BEG only in 1984 and 1985.

The escapement goal established for the Little Susitna River in 1990 has been routinely met with the exception of 1999. The concern is whether the escapement goal established in 1999, requiring 4,500 additional coho salmon, will be routinely met with current fishery configurations. The new goal is specified as a range and annual escapements should be evenly spread within that range. When applying the new goal to the past 10 years of escapement data (Table 2) the lower end of the goal was achieved during the same 9 years. Of concern is the declining pattern of recent years' escapements. Realized escapements below the midpoint of the range occurred in three of the last five years. Realized escapements in 1997 and 1998 significantly benefited from inseason fishery restrictions. Average escapements for 1997-1999 are 3% below the lower end of the goal and 22% below the mid-point.

The Board of Fisheries took the most significant actions to date for coho conservation in 1996 and 1999 by restricting the Central District drift fishery per the Northern District Coho Salmon Management Plan. Per this regulation, the drift fishery is restricted to less area than the full Central District during two periods in late July. It is highly likely that this action provided significant savings to Knik Arm coho salmon stocks. In addition the Knik Arm fishery was closed beginning in 1999.

The department recommends a reduction in the harvest potential for Knik Arm streams and the Little Susitna River. The following options are listed by fishery, sport and commercial.

Management Options for Knik Arm Coho Salmon including the Little Susitna River

Sport Fishery Options

1. **No action/status quo option.** Continue to manage the fishery under existing management plans and department emergency order authority.

2. **Reduce the bag limit for Knik Arm drainage's including the Little Susitna River from three to two coho salmon.** Bartlett and Lang (1990) estimated that a bag and possession limit of two coho salmon in the Little Susitna River reduced harvest by 30%. However, due to the increased access and the associated increase in angler effort in the lower river fishery a 10 to 20% reduction in harvest may be realized. Using the average harvest of 12,000 coho salmon since 1990 this would increase escapement by 1,200 to 2,400 coho salmon. . It is recommended that the bag limit remain at three enhanced coho salmon in the Eklutna Tailrace.

3. **Close Wasilla Creek to sport fishing for coho salmon.** Reducing the coho salmon bag limit in Wasilla Creek will not gain the required savings to the escapement to achieve this escapement goal. This fishery is currently open weekends only for 12 h per day. The relationship between the potential harvest savings (average 800 coho salmon 1995-1998) and the additional fish increase to the escapement (100 index counts) is unknown. However, closing Wasilla Creek to coho salmon fishing should provide sufficient savings to achieve the goal.

4. **Reduce the bag limit in Wasilla Creek from three to one coho salmon**. A reduction in harvest of up to 50% could be realized. While this is a less severe option than total closure, it would result in less certainty that the escapement goal would be achieved.

5. **Close the primary coho salmon spawning area to salmon fishing in the Jim Creek Drainage.** Specifically, close Upper Jim and McRoberts creeks and all waters within 100 yards of the creek mouths to salmon fishing. This would provide a small saving to the escapement given the current configuration of the fishery.

6. **Require anglers to quit fishing in waters open to coho salmon fishing after achieving a bag limit of coho salmon.** This would reduce the release mortality associated with the fishery providing a small savings.

7. **Eliminate hours from each fishing day.** This would reduce effort resulting in a reduction of harvest of coho salmon depending on the length of the fishing day.

8. **Eliminate days from the fishing week**. This would reduce effort resulting in a reduction in harvest of coho salmon by about 10% per day. Application of this restriction would be most applicable to the Little Susitna River and the Jim Creek drainage

9. **Prohibit the use of bait requiring only the use of artificial lures.** Eliminating bait in most coho salmon fisheries will reduce harvest by at least 50%.

10. **Prohibit guides from operating on the Little Susitna River for one or more days each week.** During the last five years approximately 12 to 17 guides have operated on the Little Susitna River. Other fisheries in Knik Arm do not have a guide component.

Commercial Fishery Options

A number of options have been proposed to reduce the coho salmon harvest in the Northern District commercial fishery. Options and estimated reductions are presented in Table 4.

1. **No action/status quo option.** Continue to manage the fishery under existing management plans and department emergency order authority.

2. **Reduce fishing in August in the Northern District set net fishery around the mouth of the Little Sustina River and Knik Arm.** Close that portion of the Northern District from Fire Island to Big Island in the Susitna River one or more periods beginning in August. A well-timed closure could provide a window for coho salmon saved during current regulatory drift restrictions to pass through this fishery.

3. **Prohibit fishing within one mile of the terminus of the Little Susitna River**. Currently commercial fishing is prohibited within 500 yards of this salmon stream as specified under general closed waters (5 AAC 39.290).

4. **Reduce allowable gear in the commercial fishery during the month of August in the Northern District set net fishery**. Reduce gear by 35 f, allowing a maximum 75 f per permit. A full one-third reduction of harvest potential would not be realized. This would allow a reduction across time benefiting all coho stocks migrating after August 1. The proportion bound for Knik Arm and Little Susitna River is unknown.

5. **Reduce the length of a regular fishing period in the Northern District starting in August**. Fishing period could be reduced from 12 hours to 10 or 8 hours depending on the percent reduction required. This would reduce fishing power for each regular fishing period benefiting all coho stocks migrating after August 1. The proportion bound for Knik Arm and Little Susitna River is unknown.

6. **Close the Northern District commercial fishery or some portion thereof for one or more regular fishing periods in August.** The objective would be to pass more coho salmon through the Northern District. Coho salmon that pass through the Central District during restrictions in the drift gillnet fishery the last week of July could be passed further north by a closure in early August. Early closures benefit coho salmon with earlier run timing. Again, the proportion bound for Knik Arm and Little Susitna River is unknown.

7. **Set a season closure date for the Northern District**. A closure date for the Northern District fishery is not in current regulation. A regulatory closing date would save later returning coho salmon. Again, the proportion bound for Knik Arm and Little Susitna River is unknown. Harvest reduction options ranging from 5% to 30% are presented in

Table 4.

8. **Review the Northern District Salmon Management Plan as it relates to coho conservation.** Specifically, review under what levels of coho abundance the department may open the Central District fishery south of Kalgin Island during the periods immediately prior to and after July 25th. (5AAC 21.358. (d),(2))

Assessment Option for the Little Susitna River

1. **Move the Little Susitna weir downstream**. The Little Susitna River weir is currently operated at mile 71. Prior to 1996 the weir was operated at river mile 32.5. Operation of the weir at River Mile 32.5 provides coho salmon abundance information early enough in the season to take meaningful action in the recreational fishery, but too late in the season to take meaningful action in the commercial fishery. Due to budget and time constraints, the weir will be operated at River Mile 71 during the 2000 season. Future weir location will depend on the priority of moving the weir to gain information for inriver management as compared to conducting coho salmon enumeration programs for coho salmon at another site.

SUSITNA RIVER AND WEST COOK INLET

The Susitna River may be the largest producer of coho salmon in Cook Inlet. The river drains the Alaska Range on the west and the Talkeetna Mountains on the east, emptying into north Cook Inlet (Figure 2). Abundance trends based upon inriver sport harvests appear to be stable or slightly declining (Clark et al. 2000).

Streams along the west side of Cook Inlet's Northern and Central Districts (West Cook Inlet north and south of the West Forelands) also produce coho salmon (Figure 2). Major producers of sport caught coho salmon include the Chuitna River, Kustatan River, and Silver Salmon Creek. Clark et al (2000) used sport harvest data to conclude that abundance appears to be increasing or stable for this stock grouping.

Together the Susitna and West Cook Inlet areas are large enough to have a major influence on commercial catches. Clark et al. (2000) attributed the decline of commercial coho catches in large part to declining abundance without attributing the decline to these two stock groupings. Even though inriver sport harvests do not indicate declining abundance, declining commercial catches suggest these stocks are at lower levels than prior to 1997. To further complicate the issue, declines in commercial catches were also attributed to changes in regulations.

Comprehensive long-term escapement data are lacking for this area and the department does not have a BEG management objective. Still, the department needs to configure fisheries

based on our best indicators of abundance. In the near absence of escapement, data the department uses other indicators of stock abundance such as harvest trends or productivity trends from nearby systems. The Board of Fisheries took the most significant actions to date for coho conservation in 1996 and 1999 by restricting the Central District drift fishery per the Northern District Coho Salmon Management Plan. Currently, this plan restricts the Central District drift fleet during two periods in late July. It is highly likely that this action provided significant savings to West Cook Inlet and Susitna coho salmon.

Management Options for Susitna and West Cook Inlet

Sport Fishery Options

1. **No action/status quo option.** Continue to manage the fishery under existing management plans and department emergency order authority.

2. **Reduce the bag and possession limit from three per day and six in possession to three per day and three in possession for west side Susitna coho salmon streams**. This would reduce the coho salmon harvest by about 50% for those anglers that spend the weekends or multiple days at cabins or camping without freezing facilities. Commercial lodges in the area have freezing facilities or have made arrangements for air taxi operates to pick up and freeze their clients fish. Overall this possession limit reduction may reduce the harvest potential in this are by 15 to 20%.

3. **Reduce the bag limit from three to two coho salmon for the eastside Susitna Management unit, that portion of Susitna River that is accessible by the Parks Highway.** If productivity is declining more coho salmon saved by commercial fishery restrictions may need to spawn. This reduction would also act to counter any increases in harvest potential created by the attraction of effort from areas where the bag limit has been reduced. It is anticipated this would reduce harvest by 15 to 20%.

4. **Reduce the bag limit in Susitna River and West Cook Inlet drainages from three to two.** This may reduce the harvest up to by 15 to 20%.

5. **Require anglers in the Susitna River to quit fishing in waters open to coho salmon fishing after achieving a bag limit of coho salmon.** This regulation is currently in effect in West Cook Inlet waters. This would reduce the release mortality associated with the fishery providing a small savings.

6. **Eliminate hours from each fishing day**. This would reduce effort resulting in a reduction of harvest of coho salmon depending on the length of the fishing day.

7. **Eliminate days from the fishing week.** This would reduce effort resulting in a reduction of harvest of coho salmon by approximately 10% per day.

8. **Prohibit the use of bait requiring only the use of artificial lures.** Elimination of bait

in most coho salmon fisheries will reduce harvest by at least 50%.

9. **Prohibit guides from operating for one or more days each week**. This would reduce the guided component of the fishery.

Commercial Fishery Options

1. **No action/status quo option.** Continue to manage the fishery under existing management plans and department emergency order authority.

2. **Prohibit fishing within one mile of the terminus of the Susitna River**. Currently commercial fishing is prohibited within 500 yards of this salmon stream as specified under general closed waters (5 AAC 39.290). Because of the difficulty in defining the terminus of the Susitna River, the department recommends that any regulation change in current boundary configuration refer to a one mile closure as described by latitude and longitude and determined by GPS.

3. **Commercial fishery options four through seven, presented for Knik Arm and Little Susitna River, would also benefit coho salmon returning to Susitna River and West Cook Inlet drainages north of the Forelands**. A larger percent of the harvest reductions, resulting from any Northern District-wide reduction in (Option 4) gear, (5) length of fishing period, (6) fishing period closures, or (7) season closure dates, would be bound for this area.

4. **Reduce allowable gear, length of the fishing period, or close fishing periods for West Cook Inlet, Central District**. Similar to options proposed for Knik Arm and Little Susitna River and their effect in the Central District (Table 5).

5. **Review the Northern District Salmon Management Plan** as it relates to coho conservation. Specifically, review under what levels of coho abundance the department may open the Central District fishery south of Kalgin Island during the periods immediately prior to and after July 25th. (5AAC 21.358. (d),(2))

KENAI RIVER

The Kenai River supports the largest coho salmon sport fishery in Cook Inlet. Draining out of Kenai Lake in the Kenai Peninsula Mountains through Skilak Lake, the Kenai River empties into eastern Cook Inlet south of the Forelands into the Central District (Figure 1 and Figure 2).

The department does not have a sustained yield objective for coho salmon in the Kenai

River. The department instead attempts to configure fisheries to abundance indices other than escapement. Annual escapements are unknown and total harvest and smolt production has only been estimated since 1993. Few Kenai coho salmon are caught by the drift gillnet fishery and the trend in commercial catch does not represent this stock. In 1997 the department (Carlon 1997) requested a 15-25% reduction in harvest potential for Kenai River coho salmon. Regulatory actions taken by the Board of Fisheries at its March 1997 meeting reduced the harvest potential toward the lower end of the range recommended by the department. The hypothesized general decline in coho production for Cook Inlet was not anticipated during the 1997 deliberations.

Estimates of Kenai River coho smolt abundance for return years 1997 through 2000 are 22% lower than those of return years 1993-1996. Smolt abundance is estimated to have increased in return year 1999 and 2000 to 10% below the 1993-1996 level. This increase could be negated by reduced marine survival thought to be evident in 1999.

Two fisheries harvest the early portion of the Kenai coho return. Peak levels of recreational effort directed at chinook salmon occur throughout late July and much of this effort remains in early August to fish coho salmon. In addition, during early August the ESSN (east side set net) fishery is being conducted to harvest surpluses of Kenai River sockeye salmon and additional fishing time is usually provided. In combination, higher levels of exploitation on the front end of the Kenai coho return are likely.

The Department recommends some precautionary measures be adopted for the next two years, after which time estimates of Kenai River coho abundance should be available to base future management strategies on. The level of action taken is a Board of Fisheries decision.

Management Options for Kenai River Coho Salmon

Sport Fishery Options

1. **No action/status quo option.** Continue to manage the fishery under existing management plans and department emergency order authority.

2. **Reduce the bag limit from three to two coho salmon**. Creel survey data from the Kenai River fishery in 1991-1993 and 1998 were used to estimate the harvest reduction with this change in bag limit. Savings estimated using Kenai River anglers range from 21% in 1991, to 6% in 1998, averaging 13% (Table 3).

3. **Eliminate days from the lower river fishery during early August**. Prohibiting fishing on one to three days per week will reduce the exploitation rate on early arriving coho salmon and provide some disincentive for effort directed at chinook salmon to remain.

4. **Eliminate hours from each fishing day.** This would reduce effort resulting in a reduction of harvest of coho salmon by about 10% per day.

5. **Eliminate days from the fishing week.** This would reduce effort resulting in a reduction of harvest of coho salmon depending on the number of days in the fishing week.

6. **Prohibit the use of bait requiring only the use of artificial lures.** Elimination of bait in most coho salmon fisheries will reduce harvest by at least 50%.

7. **Prohibit guides from operating for one or more additional days each week.** This would reduce the guided component of the fishery.

Commercial Fishery Options

1. **No action/status quo option.** Continue to manage the fishery under existing management plans and department emergency order authority.

2. **Close the ESSN fishery earlier**. An August 9 closure would reduce the harvest of Kenai coho salmon in the ESSN by an average 22%. This closure date corresponds to the season ending date for the drift gillnet fishery in Upper Cook Inlet put into regulation in 1996. Various closure dates could be considered (Table 6).

3. **Prohibit fishing in the ESSN fishery for one or more days during the period prior to the August season closure**. The harvest reductions would be dependent on the number and timing of the days closed (Table 6).

4. **Reduce allowable gear in the commercial fishery for the month of August in the ESSN fishery.** Reduce gear by 35f, allowing a maximum 75f per permit. This option has the potential to increase the harvest of Kenai River coho salmon. During early August this fishery is actively managed to harvest large surpluses of sockeye salmon. The potential with decreasing efficiency during a specified fishing period is that fishing periods will be added later when Kenai River coho salmon are more abundant.

5. **Reduce the length of a regular fishing period in the ESSN fishery starting in August.** Again this fishery is being actively managed using Emergency Order authority to specify the length of fishing periods to harvest surplus sockeye salmon. A decrease in fishing by one or two hours per period could be offset by additional fishing periods later in August that would catch more Kenai coho salmon. The net result could be no reduction or an increase in Kenai coho harvest.

NORTHERN KENAI PENINSULA

Major producers of coho salmon include streams along the lower Kenai Peninsula (collectively the Ninilchik and Anchor rivers, and Deep and Stariski creeks), and the Kasilof and Swanson rivers (Figure 2). Status of major systems have been inferred from sport

catches which range from stable to slightly declining harvests in the Swanson River and lower Kenai Peninsula streams, declining harvests in the Kasilof River, and stable to slightly increasing harvests overall. Due to the later run timing of lower Kenai Peninsula coho salmon it is likely they are not exploited by the commercial fishery to the same degree as those of earlier returning coho salmon. Termination of a stocking project lacking coded wire tag evaluation has confused any assessment of abundance on the Kasilof River.

Management Options for Northern Kenai Peninsula

Sport Fishery Options

1. **No action/status quo option.** Continue to manage the fishery under existing management plans and department emergency order authority.

2. **Reduce the bag limit from three to two coho salmon**. Creel survey data from the Kenai River fishery in 1991-1993 and 1998 were used to estimate the harvest reduction with this change in bag limit. Savings estimated using Kenai River anglers range from 21% in 1991, to 6% in 1998, averaging 13% (Table 3).

3. **Require anglers to quit fishing in waters open to coho salmon fishing after achieving a bag limit of coho salmon**. This would reduce the release mortality associated with the fishery providing a small savings.

4. **Eliminate hours from each fishing day.** This would reduce effort resulting in a reduction of harvest of coho salmon depending on the length of the fishing day.

5. **Eliminate days from the fishing week**. This would reduce effort resulting in a reduction of harvest of coho salmon approximately 10% per day.

6. **Prohibit the use of bait requiring only the use of artificial lures**. Elimination of bait in most coho salmon fisheries will reduce harvest by at least 50%.

Commercial Fishery Options

Commercial fishery options presented for the Kenai River would also benefit this stock grouping. A significant portion of the coho salmon not harvested due to action recommended for the Kenai River will be bound for this area.

ANCHORAGE AND TURNAGAIN ARM

Currently only about a dozen streams are open to coho salmon fishing in the Anchorage and

Turnagain Arm area. Small drainages with low coho salmon abundance are closed to recreational salmon fishing. Ship, Bird, and Campbell creeks support the primary effort and harvest in the area and target stocked coho salmon. Anchorage and Turnagain Arm wild stock coho salmon recreational fisheries are managed conservatively, as pass through fisheries, with spawning ground closures. The department does not support any restrictions to Ship, Campbell, and Bird creeks hatchery enhanced fisheries.

Management Options for Anchorage and Turnagain Arm

Sport Fishery Options

1. **No action/status quo option.** Continue to manage the fishery under existing management plans and department emergency order authority.

2. **Reduce the bag limit from three to two coho salmon**. This would likely reduce harvest by 15 –20%.

3. **Require anglers to quit fishing in waters open to coho salmon fishing after achieving a bag limit of coho salmon.** This would reduce the release mortality associated with the fishery providing a small savings.

4. **Eliminate hours from each fishing day**. This would reduce effort resulting in a reduction of harvest of coho salmon depending on the length of the fishing day.

5. **Eliminate days from the fishing week**. This would reduce effort resulting in a reduction of harvest of coho salmon by approximately 10% per day.

6. **Prohibit the use of bait requiring only the use of artificial lures**. Elimination of bait in most coho salmon fisheries will reduce harvest by at least 50%.

Commercial Fishery Options

Commercial fishery options affecting the Northern District East Side setnet fishery will benefit this stock grouping if the reduction is for the entire season after August 1 or the later portion of the season.

COOK INLET SALTWATER RECREATIONAL FISHERY

The marine sport fishery for coho salmon in Cook Inlet occurs primarily south of the latitude of the Ninilchik River on the east side of Cook Inlet. The majority of the effort is

concentrated in Kachemak Bay and adjacent to the mouths of Anchor River, Deep Creek and Ninichik River and in Rocky and Windy bays. The fishery in Kachemak Bay probably consists mostly of stocked coho returning to the Homer Spit Fishing Lagoon. The sport fishery on the outer coast likely harvests coho bound for the Homer Spit but also targets a greater mix of local stocks and fish bound for northern tributaries. Fish harvested north of Bluff Point are an unknown mix of local stocks and stocks with more northerly destinations. Harvests averaged each five year period have increased steadily north of Bluff Point and in the outer coast marine waters. Some years harvests were similar from both areas and some years many more coho were harvested north of Bluff Point. The average coho harvest from 1995 through 1998 for both areas combined, was 7,632 coho compared to the average from 1981-1984 of 2,119.

Management option for the Cook Inlet Saltwater Recreational Fishery

1. **No action/status quo option.** Continue to manage the fishery under existing management plans and department emergency order authority.

2. **Reduce the bag and possession limit from six per day and six in possession to three per day and three in possession in marine waters north of a line from Cape Douglas to Gore Point.** Analysis of logbook data indicates this would result in a 15% to 20% reduction in harvest. This would result in a savings of 1,000 to 1,400 coho salmon annually. The bag and possession limit on stocked fish should remain at six coho salmon at the Homer Spit Fishing Lagoon.

3. **Reduce the bag and possession limit from six per day and six in possession to three per day and three in possession in the waters north of a line from Bluff Point.** Analysis of logbook data indicates that this would result in a similar percentage reduction in harvest to option 1. This would result in a savings of approximately 700 to 1,000 coho annually.

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Table 1. Coho salmon escapements as a percent above or below the goal in Knik Arm streams and the number of years the goal was met.

	Percent Above (+) or Below (-) Escapement Goal					
Stream	1994	1995	1996	1997	1998	1999
Cottonwood	-23%	-19%	-44%	29%	79%	-76%
Fish	-71%	-68%	-44%	3%	103%	-35%
Jim	216%	140%	-38%	52%	79%	-60%
Subtotal	41%	17%	-42%	28%	87%	-57%
Wasilla	-65%	-65%	-52%	-24%	[a]	-11%

	Average % Above or Below			Goal Reached in Last		
Stream	3-yr	5-yr	6-yr	3 Years	5 years	6 years[b]
Cottonwood	10%	-6%	-9%	2	2	2
Fish	24%	-8%	-19%	2	2	3
Jim	24%	34%	65%	3	3	4
Subtotal	19%	7%	12%			
Wasilla	-17%	-38%	-44%	0	0	1

[a] Foot survey not conducted

[b] Number of years escapement goal in effect

Table 2. Little Susitna coho salmon escapement as a percent above or below the escapement goal set in 1990 and the goal range set in 1999.

	Percent Above (+) or Below (-) Escapement Goal			
		1999 Escapement Goal		
	1990 Goal	Low	Mid-point	High
Year	7,500	9,600	12,000	19,200
1990	46%	14%	-9%	-43%
1991	290%	205%	144%	52%
1992	151%	96%	57%	-2%
1993	230%	158%	107%	29%
1994	203%	136%	89%	18%
1995	54%	20%	-4%	-40%
1996	117%	69%	35%	-15%
1997	32%	3%	-18%	-48%
1998	102%	58%	26%	-21%
1999	-60%	-69%	-75%	-84%
Averages	Number of Years Goal Reached			
Recent 3-yr	25% 2	-3%	-22%	-51%
Recent 5-yr	49% 4	16%	-7%	-42%
Recent 10-yr [a]	75% 9	36%	9%	-32%

[a] Represents the number of years an escapement goal was in effect.

Table 3. Potential reduction in harvest with a one or two fish bag limit from creel survey data in the Kenai River coho salmon sport fishery.

		Harvest Reduction With	
Year	Angler Type	2-fish Bag Limit	1-fish Bag Limit
1991	Guided	25%	58%
	Unguided	19%	50%
	All types	21%	53%
1992	Guided	17%	49%
	Unguided	10%	37%
	All types	13%	42%
1993	Guided	19%	49%
	Unguided	7%	27%
	All types	13%	38%
1998	Guided	9%	36%
	Unguided	6%	27%
	All types	6%	29%
Average	Guided	18%	49%
	Unguided	11%	36%
	All types	13%	43%

Table 4. Options to reduce the coho harvest in the Northern District commercial fishery by percent of the August harvest. Preferred reductions would occur over the entire season.

Northern District		5 Percent	10 Percent	15 Percent	20 Percent	30 Percent
Entire	Entire	Reduce Period Length 1 Hour By E.O. Begin 8/1	Reduce Period Length 2 Hours By E.O. Begin 8/1	Reduce Gear To 75 f on 8/1 For 1 Weekly Period	Reduce Gear to 75 f on 8/1 for 1 Weekly Period & 5 Percent Reduction	Reduce Gear to 75 f on 8/1 for Both Weekly Periods & 5 Percent Reduction
Coho	Reduction	893	1,786	2,678	3,571	5,357
Westside	Entire General Sub.	Close 1 Period After 8/15	Close 1 Period 10-Aug	Close 1 Period 08-Aug	Reduce Gear to 75 f on 8/1 for 1 Weekly Period & 5 Percent Reduction	Reduce Gear to 75 f on 8/1 for Both Weekly Periods & 5 Percent Reduction
Westside	Entire General Sub.	Close 2 Periods After 8/20	Close 2 Periods 14-Aug	Close 2-3 Periods 15-Aug		
Westside	Entire General Sub.	Season Ending Date 23-Aug	Season Ending Date 16-Aug	Reduce Period Length 2 Hours By E.O. Begin 8/1	Season Ending Date 10-Aug	Close 1 Period 05-Aug
Coho	Reduction	625	1,247	1,871	2,495	3,742
Eastside	Entire Eastern Sub.	Close 1 Period 8/25 to 8/30	Close 1 Period 8/21 to 8/25	Close 1 Period 15-Aug	Reduce Gear 15-Aug to 75 f on 8/1 For 1 Weekly Period & 5 Percent Reduction	Reduce Gear to 75 f on 8/1 For Both Weekly Periods & 5 Percent Reduction
Eastside	Entire Eastern Sub.	Close 2 Periods 03-Sep	Close 2 Periods 28-Aug	Close 2 Periods 23-Aug		
Eastside	Entire Eastern Sub.	Season Ending Date 05-Sep	Season Ending Date 8/25-8/30	Reduce Period Length 2 Hours By E.O. Begin 8/1		
Coho	Reduction	269	538	807	1,077	1,615

Table 5. Options to reduce the coho harvest in the Western and Kalgin Island subdistrict commercial fishery by percent of the August harvest. Preferred reductions would occur over the entire season.

	5 Percent	10 Percent	15 Percent	20 Percent	30 Percent
Western Subdistrict	Reduce Period Length 1 Hour By E.O. Begin 8/1	Reduce Period Length 2 Hours By E.O. begin 8/1	Reduce Gear To 75 f on 8/1 For 1 Weekly Period	Reduce Gear To 75 f on 8/1 For 1 Weekly Period & 5 Percent Reduction	Reduce Gear To 75 f on 8/1 For Both Weekly Periods & 5 Percent Reduction
Reduction	209 Coho	417 Coho	625 Coho	835 Coho	1,250 Coho
Kustatan Subdistrict	Reduce Period Length 1 Hour By E.O. Begin 8/1	Reduce Period Length 2 Hours By E.O. begin 8/1	Reduce Gear To 75 f on 8/1 For 1 Weekly Period	Reduce Gear To 75 f on 8/1 For 1 Weekly Period & 5 Percent Reduction	Reduce Gear To 75 f on 8/1 For Both Weekly Periods & 5 Percent Reduction
Reduction	20 Coho	40 Coho	60 Coho	80 Coho	120 Coho
Kalgin Island Subdistrict	Reduce Period Length 1 Hour By E.O. begin 8/1	Reduce Period Length 2 Hours By E.O. begin 8/1	Reduce Gear To 75 f on 8/1 For 1 Weekly Period	Reduce Gear To 75 f on 8/1 For 1 Weekly Period & 5 Percent Reduction	Reduce Gear To 75 f on 8/1 For Both Weekly Periods & 5 Percent Reduction
Reduction	211 Coho	422 Coho	632 Coho	843 Coho	1,265 Coho

Table 6. Reduction in number and percent coho salmon for various season closure dates for the ESSN fishery in the Upper Subdistrict of Cook Inlet. Reductions are from the pre-1997 August 12 season ending date and data from 1993-1996.

Upper Subdistrict Set Gillnet Fishery	Average Upper Subdistrict Coho Reduction		Kenai River Coho Reduction	
	Number	Percent In July & August	Number	Percent In July & August
Season ending date of August 10[a]	6,747	14	2,500	22
Season ending date of August 9	8,420	17	2,500	22
Season ending date of August 8	9,638	20	3,100	27
Season ending date of August 7	10,966	22	3,200	28
Season ending date of August 6	12,629	26	3,900	34
Season ending date of August 5	15,668	32	4,500	39
Season ending date of August 4	18,201	37	5,700	49
Season ending date of August 3	20,421	41	6,700	58
Season ending date of August 2	23,068	47	6,900	59
Season ending date of August 1	25,501	52	7,800	67

Additional 24 hour closed period	Upper Subd. Coho	Kenai R. Coho
24 h window on August 1	2,796	570
24 h window on August 2	3,451	858
24 h window on August 3	3,548	834
24 h window on August 4	3,511	1,243
24 h window on August 5	3,764	1,583
24 h window on August 6	5,263	837
24 h window on August 7	3,492	841

[a] With only four years of data, fishing did not occur on August 10.

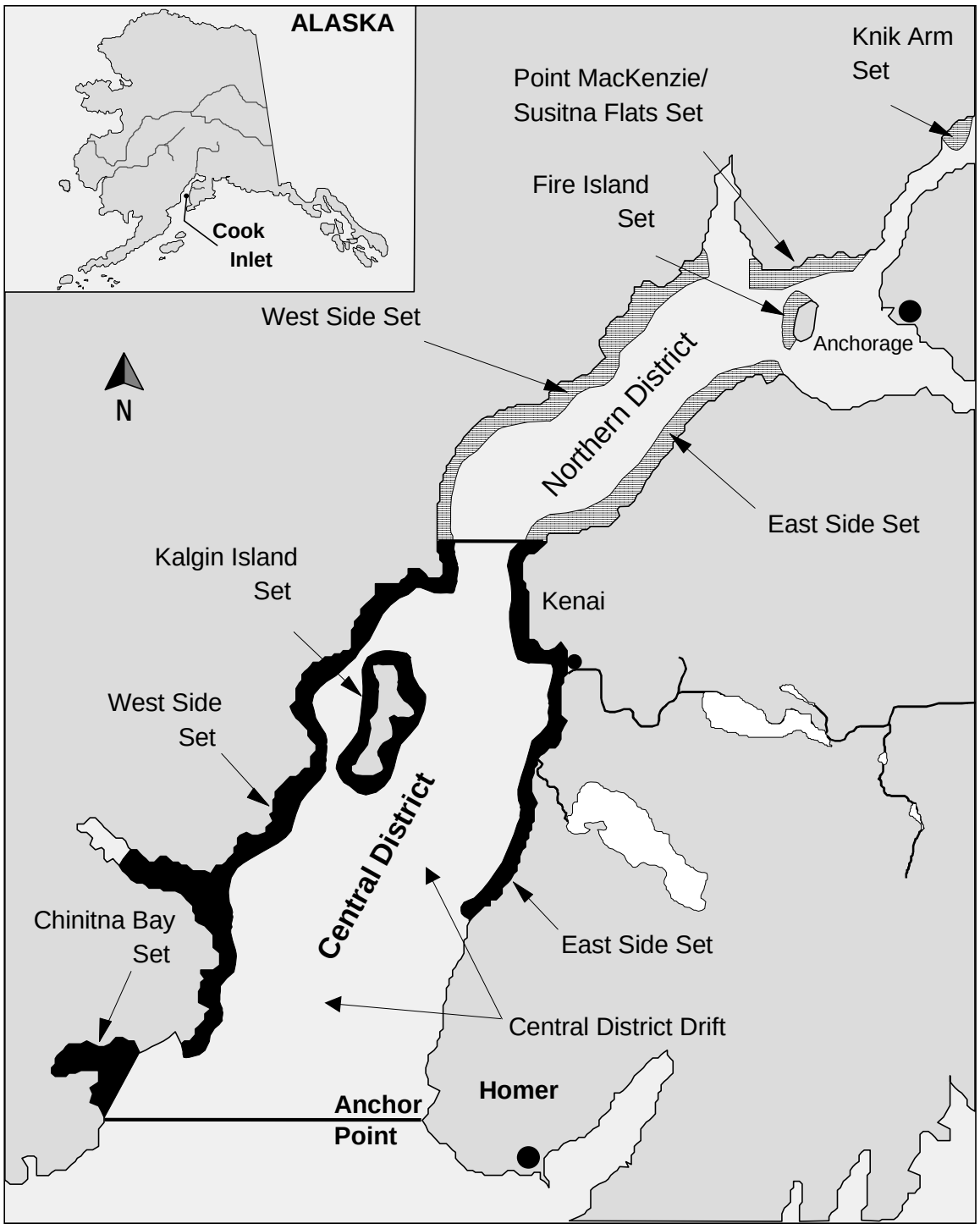

Figure 1. Upper Cook Inlet with commercial fishing districts and areas.

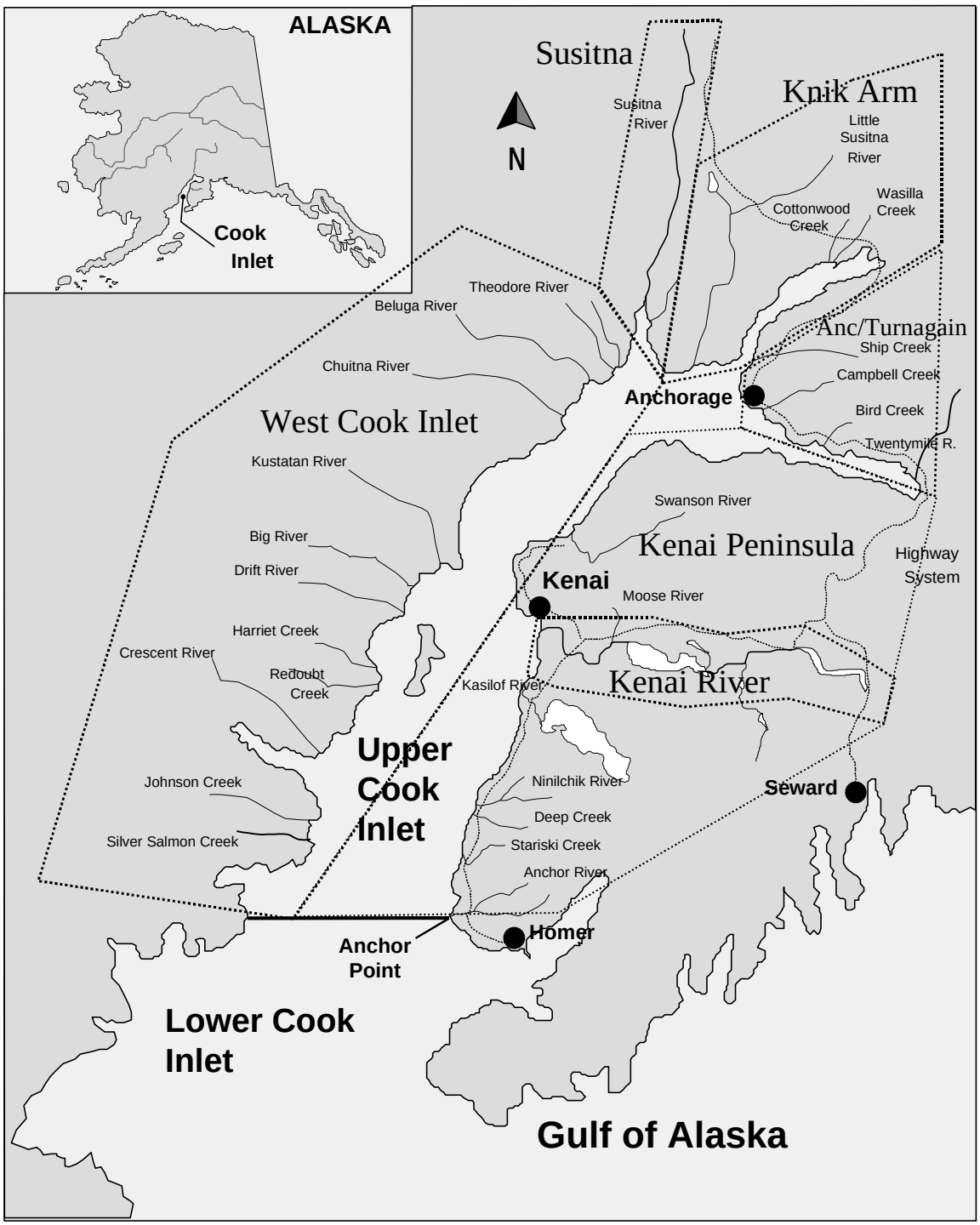

Figure 2. Upper Cook Inlet with important coho salmon tributaries and management units.